From glowbugs@theporch.com Sat Oct 5 15:54:36 1996
Return-Path: <glowbugs@theporch.com>
Received: from uro (localhost.theporch.com [127.0.0.1]) by uro.theporch.com
(8.8.0/AUX-3.1.1) with SMTP id PAA06414; Sat, 5 Oct 1996 15:50:43 -0500 (CDT)
Date: Sat, 5 Oct 1996 15:50:43 -0500 (CDT)
Message-Id: <199610052050.PAA06414@uro.theporch.com>
Errors-To: conard@tntech.campus.mci.net
Reply-To: glowbugs@theporch.com
Originator: glowbugs@theporch.com
Sender: glowbugs@theporch.com
Precedence: bulk
From: glowbugs@theporch.com
To: Multiple recipients of list <glowbugs@theporch.com>
Subject: GLOWBUGS digest 313
X-Listprocessor-Version: 6.0c -- ListProcessor by Anastasios Kotsikonas
X-Comment: Please send list server requests to listproc@theporch.com
Status: O

GLOWBUGS Digest 313

Topics covered in this issue include:

Date: Fri, 4 Oct 1996 18:05:02 -0400 (EDT)
From: "Barry L. Ornitz" <u856010@eastman.com>
To: Glowbugs Mailing List <glowbugs@theporch.com>
Cc: rdkeys@csemail.cropsci.ncsu.edu
Subject: Re^2: Temperature Control and Thermal Drifts
Message-ID: <Pine.ULT.3.91.961004140251.15367B-100000@dua150.kpt.emn.com>

On Fri, 4 Oct 1996, it was written:

> Barry and I are in a slight state of academic disagreement on the
> heating the vfo topic. Because I have seen it work in several
> instances, I will reply to it and hopefully generate some practical
> discussion and resolution.
>
> (Actually, in the end, it seems we pretty much agree).

Actually it really is sort of academic because we are working on entirely two different problems. Bob is looking at short-term stability while I am looking more at long-term calibration. These two problems are related, but the calibration issue requires much more effort than does keeping the VFO on frequency long enough to complete a QSO.

> I prefer not to use fans around VFO's because they tend to cause unstable
> air currents of widely varying temperatures around my shack.

> Everything else that I have
> ever seen, using 50 watt tubes or smaller as oscillator tubes has not
> used any sort of fan cooling. Most use ambient air dissipation through
> the case. A few, high quality vfos, use controlled heating to maintain
> the vfo at a higher temperature than ambient (usually in the neighborhood
> of 60C). Examples of this are the Technical Material Corporation's line
> of oscillators from the 60's, and the rtty oscillator used by the BC-610
> from late WWII through the Korean era. These used double wall insulated
> construction with heaters to maintain the vfo sufficiently above ambient
> that that stability could be obtained regardless of ambient temperature
> fluxes. In the case of these two oscillators, variations in room
> temperature have essentially no effect, because the outgoing heat flow
> from the vfo box swamps any room variations, and because the thermostats
> in the vfo boxes are relatively precise controls (of the order of +- 1
> or 2 C), and because the boxes have a high inherent thermal mass.

To begin, I am not talking about a wimpy little fan to promote a little cooling. I am talking about a fan moving a LOT of air - one large enough to take away the heat so well that the components never get a chance to rise more than a fraction of a degree above room temperature. The big worry here is not the thermal effects but the mechanical ones of transferring vibration to the oscillator components. Modern, high-quality

fans with ball or roller bearings geneate far less vibration than did the large bladed, slow moving fans of old.

Note that in the VFO boxes you mention they _did_ use a thermostat.

> > What is needed is temperature control, not just heat. I have never seen a
> > crystal oven or military VFO with a heater that did not have a thermostat
> > to control the temperature.

> > Constant heat ONLY works if the environment's temperature does not change.
> > If it does, the heat loss of the VFO will change and its temperature will
> > change. What you really need is a constant temperature for the frequency
> > determining components. If the VFO temperature is very high, room
> > temperature variations may have less of an effect. If the heat added
> > deliberately is far greater than the heat generated by operating the VFO,
> > running the VFO won't cause much temperature change. Of course this
> > usually means that with a giant heater in the VFO, it will heat so fast
> > that warmup time is minimized - but the VFO will still be sensitive to
> > room temperature variations, and drift like crazy until its temperature
> > does stabilize.

This is an important point here and it needs clarification. The higher the VFO box temperature is, the less it will be affected by ambient temperature changes. But it will ALWAYS be affected no matter how high a temperature you reach. In my later analogy of heat flux being analagous to current, we are describing the situation of using a high voltage source and a large series resistor to APPROXIMATE a constant current source. [Actually to be completely analagous, we are using a large constant current source (the heater) in parallel with a small variable current source (the VFO components) driving the thermal resistance of the box to APPROXIMATE a constant voltage (constant temperature).]

In real-world heat transfer, thermal resistances are HIGHLY nonlinear but let's work with a simple linear case to illustrate the point. Assume we have a VFO that generates 10 watts of heat, and that the thermal resistance of the VFO to ambient is 10 Deg C/watt. Furthermore, since I am talking about long-term accuracy here and not short term stability, we can ignore the heat capacity (thermal capacitance) and make this a DC problem. Let's call the room temperature 20 C as a reasonable number. In this situation, the VFO will achieve a temperature of 10 x 10 + 20 = 120 C. The 100 degree temperature rise is certainly enough to change the dimensions, electrical values, etc. of the components in the VFO so it will shift frequency badly. This is the warmup dirft.

Now let us assume that the good wife gets cold (20 C = 68F), and turns up the thermostat in the house by 10 C (house now at 30 C or 86 F, too hot for me!). The new VFO temperature will now be 130 C. The fractional temperature change related to the normal operating temperature is:

(130 - 120)/120 = 10/120 = 8.33%

Now let us do as Bob suggests and add an additional 10 watts of heat to the VFO by means of a heater. Now the normal operating temperature will be (10 + 10) x 10 + 20 = 220 C. This is a lot hotter than before but since this is now the working temperature, we can calibrate the VFO to be at the correct frequency here. The wife left for the afternoon so the house is now back to a comfortable 20 C.

But the wife gets back from spending the money we had been saving for the next hamfest and again turns up the heat to 30 C. Like we calculated before, the VFO temperature will rise 10 C over what is was to 230 C. But now the fractional temperature change is:

(230 - 220)/220 = 10/220 = 4.55%

Aha! Bob is right, the VFO made a smaller percentage temperature change so it does drift less. But my point is... it still drifts. And no matter how hot you get it, it will continue to do so. If you include the thermal capacitances, it also takes longer to warm up.

Now we can look at what happens if we use the additional 10 watt heater but turn it on and off with a thermostat. Let's say the thermostat controls at 150 C with a dead-band of 1 C (all mechanical thermostats must have a dead-band or hysteresis effect to function reliably). Initially with the VFO cold, the thermostat will turn on the heater and quickly reach 150 C. At 151 C, it turns off and the VFO cools towards the 120 C it would have reached without the heater. But at 150 C the heater kicks in again. On an average, the heater supplies 3 watts, but it actually cycles between 0 and 10 watts. [The result is called a limit cycle and the temperature may be plotted in phase-space to reveal the ultimate cycle. Modern mathematicians may call this a "strange attractor" but it is really "old-hat" to people working in nonlinear automatic control.] Now with the thermostat in place the fractional control result is:

(151-150)/150 = 1/150 = 0.67%

> I will have to differ with you here, to a practical extent, and invoke
> the practical application of thermal mass to the equation. If one builds
> a box with little thermal mass, then ambient temperature fluctuations will
> have a great effect on the internal temperature of the box. Heat will
> flow in or out of the box depending upon the external temperature changes.
> One can compensate for this by heating the box, but it will take a lot
> of heat to swamp out the external temperature changes to a negligible
> value. On the other hand, if one builds a relatively tight box with a
> large thermal mass, then that effect is practically negated and the
> changes with time are smoothed out to very slow drifts. Now, if one

> then adds sufficient heat to the system to overcome the longterm drifts,
> one has a stable system, to all practical intents and purposes.

Once we add thermal heat storage to the system, or capacitance to the electrical analogy, we can look at how the system behaves in the time domain, or an AC rather than DC analysis. Adding thermal mass to the system definitely will increase the thermal time constant and lower the cutoff frequency of the low-pass thermal filter. In other words, short term room temperature variations will affect the VFO less. In the above example, when the wife turns up the house temperature, the VFO might remain stable enough to complete the QSO, but after several hours it will _still_ drift to the frequency corresponding to the higher ambient temperature. This is where I was talking about a calibration issue. I want the VFO to remain on frequency not for just a few minutes, but for days, weeks, and years. In other words, if I calibrate the dial - I want that calibration to remain for a looooong time! :-)

> {Chromatograph stuff deleted.}

I am quite familiar with the need for temperature control in chromatographs. In fact, the best units ALWAYS have an oven fan to insure the entire column is at a constant temperature and that there are no gradients in the oven. Whether the heat comes from a light bulb or a cartridge heater in a finned block is unimportant. What is important is the isothermal temperature control (or programmed ramp in fancier GC's).

> {Static gradient temperature control system description deleted.}

> Both of the above cases plus the way the commercial/military vfo's were
> constucted have made a strong suggestion to me that the simple light
> bulb trick will work eminently well as a vfo temperature controlling
> system. It may take a few hours to come up to temperature the first
> time, but once there, the system is quite stable, in my hands in the
> lab.

>From my simple analysis above, I think you can see why the heating HELPS but does not solve the problem of ambient temperature excursions.

> > Actually, the ideal case would be for the heater to run only when the VFO
> > is turned off but to produce the same heat as the VFO components when the
> > VFO is turned on. Wiring the heater across the AC line switch usually
> > accomplishes this.
>
> That might be an interesting thing to try, but I prefer to keep the box
> on the vfo warm, all the time and put the tube external to the box.
> That is how the military and commercial oven vfo's work. That only
> adds about 1 to 2 inches of lead length through some ceramic feedthroughs
> and keeps the tube heating contribution out of the vfo heat system.

This particular suggestion eliminates most of the warm-up drift but not the drift due to room temperature variations. One disadvantage of increasing the thermal mass of a system to increase its thermal time constant is the fact that it also increases the warm-up time too. This can be a significant problem unless you keep the rig turned on all the time.

> My suggestion of the heater resistor is based upon what Radiomarine Corp.
> did in their marine gear to 1) assist in humidity control, and 2) assist
> in vfo stability. They used a resistor that dissipated about half an
> amp through a 15 volt drop to generate sufficient heat to stabilize
> the receivers under all conditions found at sea. That is about the
> same as a 7.5 watt light bulb. If it worked in receivers, it should
> work in vfo's.

The humidity aspect is important and it is always a good idea to keep the electronics slightly above room temperature to prevent condensation on the equipment. The "assisting" in VFO stability is true, but it does not "correct" the problem. I suspect that for the marine environment, the receiver was left on continuously so warm-up drift was not a problem.

> Theoretically it does not matter which way the heat flow goes, but I
> would expect it to be easier for us glowbugging types to find a heat source
> such as a small lamp or resistor rather than a refrigeration system such
> as a Peltier effect plate or the like.

Gee, Bob. Your junque box must not be as well stocked as mine. I have two Peltier coolers at home. They are quite inexpensive on the surplus market! :-)

> Now we actually are agreeing on the heat load and thermal mass concepts.
>
> Temperature control is expensive, and not necessarily a trivial concern.
> Good control systems from commercial houses run 20-100 bucks for thermostat
> type controllers, and lots more for electronic controllers. That is why
> I was suggesting the simple heat lamp or heat resistor approach.
> Also, you can find the parts anywhere.

Whatever happened to scrounging? The guy from Piney Flats, TN, about 50 feet from where you set up at Shelby, was selling nice little thermostats for about $3 each. I can point you to catalogs with a number of simple thermostats for less than this. For a home VFO system, you can take the bimetallic thermostat out of a junked hair dryer, bend the leads slightly, and be working. Hair dryers also contain a secondary protective device which is a one-shot thermal fuse. These look like a small .22 round but with a plastic "slub" with a wire coming out of both ends. They are handy

when building power supplies that may be romote from the rig, to protect against over-temperature conditions.

> Commercial temperature controllers for heating systems, etc, run about
> 40-150 dollars in my Grainger catalogue. Heating elements are about
> 20 dollars minimally for cartridge or bolt-on heaters. I will still
> take a simple 4-15 watt lamp and make it work, at those prices, unless
> I find something in surplus.

I bought some Dale wire-wound resistors at Shelby that are perfect for this. They are threaded and have fins to help circulate the heat to the air. They were about $1 each. Light bulbs work well too and they give a visual indication of their power status. Always save the nichrome wire from burnt-out toasters, hair dryers, and such too.

> > Temperature CONTROL is relatively trivial with moder solid-state stuff.
> > That TS-323 I got at Shelby will probably get active temperature control
> > with a proportional (rather than on-off) heater system.
>
> Yes, something like an SCR controller might work, and those are not that
> expensive, albeit they can generate horrendous noize if I am remembering
> correctly --- bad bad bad around regen receivers.....(:+{{......

No a SCR-based system is either phase-angle controlled (noisy) or time proportioned. Neither would be good in a receiver unless you use what is called "zero-crossing" triggering circuits.

What I am talking about IS solid-state, of course. Tubes make lousy DC amplifiers unless you go to GREAT pains. Basically a $1.50 thermistor, a $0.50 operational amplifier, a handful of resistors, and either an optically isolated SCR trigger circuit at $2.00 and another $1.5 SCR, or a power transistor at $1.00 and a low voltage heater. This assumes you have a source of unregulated 6 to 24 volts of DC. This gives you a PROPORTIONAL control system rather than an ON-OFF system. For those not familiar with the concept, a proportional control system gives an output proportional to the difference between the desired temperature and the actual temperature. It does not have the hysteresis of an on-off system.

> I don't know that we need that tight a temperature control, but it should
> be feasible. I am expecting that thermal mass ``capacitance'' as you call
> it below is more important to a well functioning stable vfo temperature
> system.

It is more important for short term stability but a fast enough acting control system can do even better.

> > In a VFO, EVERYTHING is temperature sensitive.
>

> Yes, everything is temperature sensitive. But, depending upon the oscillator
> design, effects of temperature can be minimized in many ways. The choice
> of oscillator will affect stability. A Hi-C circuit will tend to be
> more stable in the short term, but may drift a little more in the long
> term, for example. Putting the tube heating outside the coil box will
> help to stabilize things. Remoting the vfo tuning box was common in
> the 50's and 60's in ham construction articles. The Clapp oscillator
> works well in the remoted mode.

The remoting is exactly like I suggested with the fan. In the remote,
virtually no heat is generated in the frequency controlling circuits so
they are as stable as the room temperature is stable. If the fan had
adequate air moving capability, it takes away the heat as fast as it is
generated accomplishing basically the same thing. Once again, vibration
is a separate issue as are moving metal blades in the electromagnetic
field around the oscillator components.

> Temperature control is attractive, and even as simple as a light bulb
> or heating resistor, if it is properly thought out.   It does not need
> to be exotic, but can be simple. It can be expensive, on the other hand,
> if one wants to get hairy with it.

I gave several ways for the control to be inexpensive and simple. Heat is
heat, be it from a light bulb or from a resistor, or a commercial
cartridge heater. My estimate is around $10 total if you are good at
scrounging.

> > Probably the simplest way for someone trained in electronics to visualize
> > thermal systems is by way of analogy. Think of temperature as being
> > potential, and heat flow as being current. The isulation is resistance
> > and the chassis and component mass is capacitance (there is no analogy to
> > inductance with a thermal system). Heat generated in components acts as a
> > current source and heat loss to the surroundings can be represented as a
> > resistance connected to a voltage source representing the surrounding
> > temperature. With this analogy, you can quickly see why you need a
> > "voltage regulator" or "temperature controller" for the VFO components for
> > optimum performance.
>
> Interesting analogy.

The real problem is that the resistances are all quite nonlinear. That
is they depend on the temperatures. The capacitances are even nonlinear
but to a much lesser degree. The nonlinearity can act to your advantage
or disadvantage; it is probably why electrical engineers often have
problems understanding thermal problems.

> Agreed, and it is too little thought about in most circles. That is why
> I threw out the lamp system as a solution. It has worked very well for me

> in the lab. It should work just as well in the glowbugging arena.
> More exotic things can be done, but simple thermal mass and a heat source
> works very well for me, for starters.
>
> If we wanted to get more exotic, we could take a thermistor and use that
> to control a small amplifier that would control the scr rather than a
> simple dial as found on motor speed controllers. Hmmm, sounds like it
> might work, but it would require sandbox technology.....(:+{{.....

Exactly. Think of a thyratron instead of an SCR (2D21, maybe?) and it
might look more attractive to you. Tubes are fun and they are more
forgiving of mistakes by newcomers than solid-state, but I hope I _NEVER_
EVER see another vacuum tube DC amplifier..... or mercury rectifiers, or
selenium stacks, etc. except in a museum.

> Good discussion, Barry.....
> 73/ZUT DE NA4G/Bob UP

Thanks, Bob. I think we really do agree but as I said we were looking at
two different problems. Like Larry Ware over on Boatanchors, I tend to be
more interested in calibration, accurate standards, and high performance
than most hams. But this is still a good discussion and I hope it
challenges some of those designing their own equipment to at least think
about the problem of thermal drift and stability.

{Heh, heh! Little do those poor souls on Glowbugs know that Bob and I
have a hidden agenda of...   teaching!   }

Hang in there folks, we don't give pop quizzes!

          73, Barry L. Ornitz WA4VZQ ornitz@eastman.com

Date: Fri, 4 Oct 1996 18:41:55 +0000
From: "Brian Carling" <bry@mail1.mnsinc.com>
To: Art Winterbauer <art@comet.ucar.edu>, glowbugs@theporch.com
Subject: Re: Need basic info on transformers
Message-ID: <199610050141.VAA19795@user2.mnsinc.com>

 > "Standard" color coding for primary, secondaries, taps, etc. and methods of
> determining the same for transformers without color coded wires. Does anyone
> know of an in-print information source?

Well, Art:
I know THIS much:
Black = AC primary.
(Sometimes one black & one white.)

RED = plate supply high voltage
red & yellow striped is a CENTER TAP H.V. lead.

GREEN = filament.
GREEN/YELLOW striped = fiament center tap.

Other colors indicate extra windings such as a seperate winding for a
bias supply, screen supply or whatever. Colors for these varied, but
BLUE and BROWN were aamong the more common ones.

I hope that helps!

SEVENTY-TOOB de AF4K / G3XLQ
Brian Carling in Gaithersburg, Maryland, USA
bry@mnsinc.com
http://www.mnsinc.com/bry/

Date: Fri, 4 Oct 1996 18:41:56 +0000
From: "Brian Carling" <bry@mail1.mnsinc.com>
To: rdkeys@csemail.cropsci.ncsu.edu, glowbugs@theporch.com
Subject: Re: BA/GB Weekend Frolicks
Message-ID: <199610050141.VAA19805@user2.mnsinc.com>

Bob - re the QRGs

Well, I am listening on 7050R5 here and I hear a few WEAK CW signals,
a VERY loud SSB signal, and NN7H busily calling K8NGF or K8TPF on top
of all of it!
I tried breaking in to what SOUNDED like a weak BA/GB signal but they
didn't hear me...

> Well, I would like to invite all Boatanchorite/Glowbuggite folks to remember
> the extended BA/GB Friendly Firebottle Fist Function net funzies this weekend,
> and to join in on the loads of fun/funny signals/classic fists/etc that are
> aboard, if you have the time, on Friday and Saturday nights, as follows:
>
> QTR 0100Z QRG 7050R500KHZ (this should be a good transcon time for West Coast
>   folks to try their luck on 40M).

OK will try 80M later.

> QTR 0200Z QRG 3579R545KHZ (this is the usual BA 80M roundup).
>
> QTR 0300Z QRG 1802R500KHZ (the ol' top band is getting into fine form!).
>

> QTR 0400Z QRG 3579R545KHZ (fires ye up yer ancient Hartleys, peanut whistle
>   glowbugs, etc., here, cuz W1AW has gone to bed).
>
> QTR 0500Z QRG 3579R545KHZ (a second round for transcon time for West Coast
>   folks to try their luck on 80M).
>
> Call from on the hour to about 5 minutes after the hour, listening between
> calls as follows:
>
>   CQ BA CQ BA DE yourcall yourcall K
>
> Don't depend upon me to start it rolling. If I am not there, someone else
> get the ball rolling.
>
> If a group has started, break into the roundtable wit a single dit or a
> single dah or a single DE or a single DE yourcall K, to get others
> attention. We normally listen for a few seconds between operators to
> pick up additional stations as they happen aboard. Once a round has
> been completed, the lead operator will usually call for more folks to
> join at that time.
>
> Normally on the 80M or 160M QRG there can easily be both a west coast
> and an east coast group going, without major interference to each other,
> especially if glowbugs are run.
>
> Remember, this is not a formal net, but is a goodly fun roundtable.
> If a great number of folks show up, someone may take a simple form
> of control to keep things rolling, slightly more formalized.
> Usually, it is just a simple round table format.
>
> So, the winter season is upon us, and the night will be cool this fine
> evening, the QRN will be down and the bands should be UP.

QRN??? It is almost as loud here as the SSB signal which is running
about S-6 or 7 and the CW signals are all right at about S3 or S-4 !

Also heard on 7050 kHz here in MD:
AA8TW or AA8TO
K8TPF
NN7H
W6XM

I called CQ a couple of times. No replies.
Will try 80m at 0200 GMT in a bit!

73, Bry AF4K / G3XLQ
Brian Carling in Gaithersburg, Maryland, USA
bry@mnsinc.com

http://www.mnsinc.com/bry/

Date: Fri, 4 Oct 1996 16:35:35 -1000
From: Jeffrey Herman <jherman@hawaii.edu>
To: Brian Carling <bry@mail1.mnsinc.com>
Subject: Re: BA/GB Weekend Frolicks
Message-ID: <Pine.GSO.3.93.961004163519.15888C-100000@uhunix3>

Brian, What are you using for an antenna?

KH2PZ / KH6

Date: Fri, 4 Oct 1996 19:59:02 +0000
From: "Brian Carling" <bry@mail1.mnsinc.com>
To: Jeffrey Herman <jherman@hawaii.edu>
Subject: Re: BA/GB Weekend Frolicks
Message-ID: <199610050257.WAA23786@user2.mnsinc.com>

> Date: Fri, 4 Oct 1996 16:35:35 -1000
> From: Jeffrey Herman <jherman@hawaii.edu>
> To: Brian Carling <bry@mail1.mnsinc.com>
> Cc: Multiple recipients of list <glowbugs@theporch.com>
> Subject: Re: BA/GB Weekend Frolicks

> Brian, What are you using for an antenna?

Bent G5RV dipole up about 25 feet!

You?
Brian Carling in Gaithersburg, Maryland, USA
bry@mnsinc.com
http://www.mnsinc.com/bry/

Date: Fri, 4 Oct 1996 20:32:16 +0000
From: "Brian Carling" <bry@mail1.mnsinc.com>
To: glowbugs@theporch.com
Subject: 3579.5 kHz
Message-ID: <199610050331.XAA25197@user2.mnsinc.com>

Good signals from NA4G with the 2 watt Hartley osc.
Also heard Sandy W5TVW

I had to go - falling asleep. After all I was cheating iwth an FT-840
instead of an old tube xmtr.
Will have one soon though, you'll see!
Well done Bob - your 2 watts sounded like 50 watts here!

Bry, AF4K / G3XLQ

GN
Brian Carling in Gaithersburg, Maryland, USA
bry@mnsinc.com
http://www.mnsinc.com/bry/

Date: Fri, 4 Oct 1996 20:36:41 +0000
From: "Brian Carling" <bry@mail1.mnsinc.com>
To: glowbugs@theporch.com
Subject: Re: BA/GB Weekend Frolicks
Message-ID: <199610050335.XAA25363@user2.mnsinc.com>

> Brian, What are you using for an antenna?
>
> KH2PZ / KH6

Ooops - sorry of I already replied to this!
A G5RV dipole up about 25 feet!

Brian Carling in Gaithersburg, Maryland, USA
bry@mnsinc.com
http://www.mnsinc.com/bry/

Date: Sat, 5 Oct 1996 04:06:19 +0000
From: "Brian Carling" <bry@mail1.mnsinc.com>
To: hmiller@sound.net
Subject: Re: QRP with tubes
Message-ID: <199610051105.HAA09192@user2.mnsinc.com>

Harley Miller writes:

> Bry:
>
> I'm all for this idea. We have aready-made group that fits our ideals
> and we may provide some new impetus for them. No sense setting up a
> competetive operation. Lets push for an informal net or rag-chew time
> and freq.
>

> Harley

Harley (& everyone)
What would be the best time / FREQ for YOU to do such a net with
other glowbugs ops?

I met up with NA4G last night on 3579 kHz & had a nice chat. He was
running 2 watts!

Bry, AF4K / G3XLQ
Brian Carling in Gaithersburg, Maryland, USA
bry@mnsinc.com
http://www.mnsinc.com/bry/

Date: Sat, 5 Oct 1996 04:06:20 +0000
From: "Brian Carling" <bry@mail1.mnsinc.com>
To: sigcom@juno.com (Stephen M Smith), glowbugs@theporch.com
Subject: Re: QRP & tubes
Message-ID: <199610051105.HAA09198@user2.mnsinc.com>

So Steve, have you done anything yet with the 6L6 rig?
What about that 1625 one?
Maybe if you let some of us know WHEN you will be on this weekend we
can take a listen for you!
Brian Carling in Gaithersburg, Maryland, USA
bry@mnsinc.com
http://www.mnsinc.com/bry/

Date: Sat, 5 Oct 1996 04:06:20 +0000
From: "Brian Carling" <bry@mail1.mnsinc.com>
To: scotbri@rosevax.rosemount.com (Scott Brigham), glowbugs@theporch.com
Subject: Re: Tube QRP
Message-ID: <199610051105.HAA09201@user2.mnsinc.com>

So Scott... did you get this little jewel on the air yet?

> Hi Bry --
>
> I've been getting back into hamming in the past
> few years after letting it wane, and have been
> focusing on QRP and boatanchor worship. One thing
> I dug out of my pile of "stuff" was a one-tube
> QRP transmitter I built about 10 years ago.
> It uses a 6AQ5, is crystal controlled and puts

> out about 2 watts on 80 and 40 meters. The only
> problem is, I have no idea where I got the original
> plans for it -- some book I must have gotten at
> the library at the time. It is a cute little
> rig. I may have to reverse engineer it some day
> and at least create a schematic.
>
> 73,
> Scott
> ==
> scotbri@rosemount.com
> Scott Brigham (AA0HU)   "Lamb Chop is a U.S. puppet, down with Lamb Chop!"
> Rosemount, Inc.
> Eden Prairie, MN USA   - my gal Jo
> ==
>
>
>
Brian Carling in Gaithersburg, Maryland, USA
bry@mnsinc.com
http://www.mnsinc.com/bry/

Date: Sat, 5 Oct 1996 05:33:59 +0000
From: "Brian Carling" <bry@mail1.mnsinc.com>
To: tkell@nyx.net
Subject: JUNO = FREE access to Glowbugs, qrp-l etc.
Message-ID: <199610051232.IAA11700@user2.mnsinc.com>

A while back, Ted Kell wrote regarding JUNO:

>Last week I asked for help obtaining a copy of the JUNO disk. Through
>the efforts of several kind souls I have the software now. I uploaded
i>t to the QRP-L ftp site and Jim, the keeper of the site has placed
>it in

ftp://ftp.lehigh.edu/pub/listserv/qrp-l/tools/juno.zip

>whence you may get it at your lesure. If you wait for JUNO to send
>you one, I think you may have a _long_ wait.

>Thank you very much to those that helped and offered to help.

>Ted
[snip]

Ted - the file is actually named JUNO115.ZIP

NOT juno.zip

I hope that is helpful to someone. I am posting this in GLOWBUGS as
well, and hope that I will be forgiven if this is off-topic.

However, I think it will give a lot of QRP TUBES ops an opportunity
to get on GLOWBUGS even if they don't have full Internet access!
Please tell your NON-INTERNET friends to get JUNO and get on GLOWBUGS
with us.

I can re-post this to qrp-l since I am not ALLOWED on there by the
list owner K5FO Chuck Adams who has BANNED me (!) for flaming a
couple of people on there who baited me back in May!

All the best to all of you GB'ers!

Brian, AF4K / G3XLQ
Brian Carling in Gaithersburg, Maryland, USA
bry@mnsinc.com
http://www.mnsinc.com/bry/

Date: Sat, 5 Oct 96 07:43 CDT
From: Jake Hellbach <kk5hy@accesscom.net>
To: bry@mail1.mnsinc.com
Subject: Re: tube pinouts
Message-ID: <2.2.16.19961005074003.3ea73b54@accesscom.net>

Hi Brian,
You can try this URL:
http://linux.cec.army.mil/htbin/billcnt/hamradio/equipment/mi.htm

He has tube listings and pin-outs, the problem is sometimes his site is down
so try again.
He also has a listing of all military gear with schematics of most online.

73' Jake KK5HY

At 05:59 AM 10/4/96 -0500, you wrote:
>Does anyone know if there is a place on the WWW, either a Web Site or
>FTP location, that has listings of VALVE/TUBE base PIN-OUTS?
>
>Makes me wish I hadn't tossed all those GE, RCA, EIMAC books etc.

>years ago!
>Brian Carling in Gaithersburg, Maryland, USA
>bry@mnsinc.com
>http://www.mnsinc.com/bry/
>
>
++
Email via: kk5hy@accesscom.net
A.M. International #832
Check out the Westside ARC Web page at:
http://www.accesscom.net/~kk5hy
Now updated with boatanchor links!!!!!
++

End of GLOWBUGS Digest 313
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